TB CARE I

TB CARE I - Mozambique

Year 3

Annual Report

October 1, 2012 –September 30, 2013

October 31, 2013

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List of Abbreviations

ACSM	Advocacy, Communication and Social mobilization
CHASS Niassa	Clinical HIV/AIDS Service Strengthening Niassa Province
CHW	Community Health Workers
CMAM	*Central de Medicamentos e Artigos Médicos* (Central Medical Warehouse)
CDC	Centre for Disease Control
EGPAF	Elizabeth Glaizer Pediatric AIDS Foundation
FGH	Friends in Global Health
HCW	Health Care Workers
IAs	Implementing agencies (for Community Based DOTS activities)
ICAP	International Center for AIDS Care and Treatment Programs
IPT	isoniazid preventative therapy
JHPIEGO	John Hopkins
KNCV	Royal Netherland Tuberculosis Association
LED	Light Emitting Diode
NMCP	National malaria control program
NRL	National Reference laboratory
MOH	Mozambique Ministry of Health
MSH	Management Science for Health
NTP	National tuberculosis control program
MoH	Ministry of Health (Mozambican)
PCA	Patient Centered Approach
PMI	President Malaria Initiative
TB CAP	Tuberculosis Control Assistance Program
USAID	United States Agency for International Development
WHO	World Health Organization

Executive Summary

TB CARE I is a global USAID funded project implemented by TBCTA in partnership with KNCV Tuberculosis Foundation (KNCV) as the prime. The project was expected to last five years, but it reached its funding ceiling earlier than expected and its period of implementation was therefore reduced to four years for nearly all the country projects. The TB CARE I project in Mozambique is currently entering its fourth year (and last year) of implementation and this report covers activities implemented in year three (October 01, 2013 to September 30, 2013). In addition to providing technical assistance to the National Tuberculosis Control Program (NTP) and National Malaria Control Program (NMCP), FHI 360 leads the partner coalition in Mozambique and assumes a coordinating role in the implementation of all eight technical areas, and malaria. Other partners supporting TB CARE I/Mozambique project include KNCV Tuberculosis Foundation (KNCV), World Health Organisation (WHO) and Management Science in Health (MSH).

Some of the activities planned for Year 2 (including Year 2B work plan) could not be completed by September 30, 2012 as planned due to their late start, and were carried over to year 3 work plan with their respective budgets. As a result, the total funding available for year 3 was US$ 7,342,976, including US$ 6,116,000 as new funds (country buy in amount), and US$ 1, 179,976 carried over from APA2. FHI360 supports 7 of the 8 technical areas covered by the project (Universal access, Laboratories, TB Infection Control, Programmatic Management of Drug Resistance TB (PMDT), TB/HIV, Health Systems Strengthening (HSS), and Monitoring and Evaluation (M&E), Operations Research (OR) and Surveillance); KNCV supports Universal Access, PMDT, and M&E, OR and Surveillance; WHO focusses on HSS and M&E, OR and Surveillance; and MSH supports Universal Access, Laboratories, HSS and Drug Supply and Management. Budget allocation per technical area is 38% for Universal access, 21% for Health Systems Strengthening, 12% for Laboratories, 11% for M&E, OR and Surveillance, 5% each for Drug Supply and Management, PMDT, and TB/HIV, and 3% for Infection Control.

Year 3 activities were implemented over a12 month-period for carried over activities, and over a 9 month-period for new activities with the following tangible results attained during the year:

- The project expanded CB DOTS activities to five new districts, thus bringing the total number of districts supported by TB CARE I to 50 districts out of 128 districts in the country, representing 51 % of the population in the country and 66% of the total population covered by CB DOTS.
- Introduction of new technologies to more provinces, with the installation of GeneXpert machines procured by TB CARE I in 3 sites. These machines contributed to increased case detection rate for TB and MDR TB, with 1,269 samples successfully processed, of which 233 were MTB+, and 73 of the 233 were also Rif+ from TB CARE I GeneXpert sites in APA3 and have initiated SLD treatment.
- Training of 448 community volunteers in TB Infection Control at community level with emphasis on administrative and environmental control measures. This training has increased the knowledge of volunteers and community health care workers of basic IC measures and improved their skills when conducting home visits and educating TB patients to enhance their adherence to treatment, and reduce TB transmission within households and communities.
- The project supported 4 provinces in training clinicians in TB/HIV. After the training, clinicians with skills acquired, expansion and implementation of One Stop strategy was strengthened by expansion to all 11 country provinces.

Introduction

The TB CARE I project in Mozambique is implemented through a coalition of 4 partners (FHI 360, KNCV, MSH and WHO) and currently covers 50 districts in seven geographical provinces of Mozambique representing 66% of the combined population in the target provinces and 51% of the total population in the country.

The project's eight technical areas (Universal access, laboratories, infection control, Programmatic Management of Drug Resistant TB (PMDT), TB/HIV, Health System Strengthening (HSS), Monitoring & Evaluation, Surveillance and OR, and Drug supply and management) are designed to add synergies in the support given to the Mozambican NTP in TB control including drug resistant TB (DR-TB). Given the limited country capacity to fund TB control activities, the TB CARE I project plays a critical role for NTP in supporting the implementation of its strategic plan and innovations and improvements in the delivery of TB services.

FHI360 is the coalition lead in Mozambique and covers all 8 technical areas with nearly half of its budget going towards CB DOTS implementation and the rest for technical assistance to the NMCP and NTP.

MSH's role under APA3 focused on three main technical areas; Universal access, Laboratories and Drugs & Logistics. Under the Universal Access technical area, MSH's new activity was the implementation of SOPs in three selected hospital in Gaza province with the aim of increasing the TB case detection rate. MSH used the experience gained in Tanzania, Ghana and Afghanistan to orient all health workers in the selected sites and provide them with specially customized SOPs to guide staff in screening client for TB, diagnosis and basic TB management skills. For Lab, support was mostly on provision of technical assistance (TA) to the FHI360 laboratory advisors and to facilitating other lab related activities as and when requested by the FHI360 team, while drug management is the main activity that MSH provides TA and support for under TB CARE I.

KNCV provides TA to both NTP and other TB CARE I coalition partners especially for PMDT, Universal access (ACSM) and M&E, and WHO is mostly oriented towards M&E with an NPO contracted to support the NTP M&E department.

Through the TB CARE I implementing mechanism, the project scope of work includes assisting the NTP to expand intensified case finding, provide universal and early case detection of TB (including access to DST for suspected cases) and treatment to all those with MDR TB, enhance airborne infection control efforts, expand access to and integrate treatment of TB and HIV in co-infected individuals, and assist national programs to strengthen the health system as it relates to TB.

The TB CARE I project applies a combination of strategies which include partnerships with other implementing organizations and an integrated approach to respond to the TB and malaria epidemic. Mozambique is the only TB CARE I country program implementing both malaria and TB interventions. The malaria activities are funded through the President's Malaria Initiative and the project provides national-level assistance to the NMCP. The main three components of TB CARE I support to the malaria program include: technical assistance to the NMCP with a focus on monitoring and evaluation, training of laboratory technicians in all the 11 provinces and implementation of an antimalarial drug efficacy study. As for the TB component, the project provides technical assistance to the Mozambique NTP, contributing to the national, global and Millennium Development Goals targets for TB.

Core Indicators

TB CARE I has seven core indicators that the program as a whole is working to improve across all countries. Table 1 summarizes the core indicator results across the life of the project for TB CARE I-Mozambique. Results for 2013 will be reported on next year.

Table 1: TB CARE I core indicator results for Mozambique

Indicators	2010 (Baseline)	2011 (Year 1)	2012 (Year 2)
C1. Number of cases notified (all forms)	42,126	47,452	50,270
C2. Number of cases notified (new confirmed)	20,097	19,537	20,951
C3. Case Detection Rate (all forms)	53	49	49.7
C4. Number (and percent) of TB cases among HCWs	N/A	N/A	117 (0.3%)
C5. Treatment Success Rate of confirmed cases	84.5	85.2	85.2
C6. Number of MDR cases diagnosed	165	184	283
C7. Number of MDR cases put on treatment	86	146	215

Reporting of data for HCW screened and diagnosed with TB started effectively in 2012 after NTP pushed for the practice to be done in all health facilities and data reported to NTP.

Summary of Project Indicators and Results

Table 2: TB CARE I-Mozambique Year 3 indicators and results

Expected Outcomes		Outcome Indicators	Indicator Definition	Baseline or Y2 (timeframe)	Target Y3	Result Y3	Comments
Universal Access:							
1.1	Increased demand for and use of high quality TB services and improve the satisfaction with TB services provided (Population/Patient Centered Approach)	Number of districts that are implementing CB DOTS	Number of districts covered by CB DOTS implementation through CB DOTS implementing agencies using NTP CB DOTS strategy	36 districts (Yr 1)	45 districts	45 districts covered	Year 2 carryover activity/indicator
				45 districts (2012, Y2)	60 districts	50 districts covered	Expansion of CB DOTS to new 5 districts in APA3
		Percentage of TB CARE I districts implementing PCA tools	Number of districts implementing the 3 PCA tools/ total number of TB CARE I CB DOTS districts	4% (2 Pilot districts - (2012, Y2)	50% (25 districts, 5 Provinces)	30% (15 districts, 3 Provinces)	
1.2	Increased quality of TB services delivered among all care providers (Supply)	Percentage of health facilities in TB CARE I target provinces with clinicians trained in TB diagnosis and treatment	Health facilities with clinicians trained in TB diagnosis and treatment/total health facilities in TB CARE I target provinces	N/A	80% (845/1057)	60% (637/1057)	46 districts in 7 provinces were visited during the integrated NTP/TB CARE I supervision visits.
		Prisons with DOTS	This indicator measures the coverage of prisons providing DOTS services.	Preliminary meetings conducted with NTP & Prison	3 prisons visited for assessment	4 assessments visits in 4 prisons conducted	Four prisons (3 regional and one provincial) were visited to assess TB control mechanisms in place

			Prisons should regularly diagnose and refer suspects and should put patients on treatment in order to be qualified as providing DOTS.	services for the APA3 activities (Yr 2)			and information collected will be used to strengthen TB interventions in prisons nationwide. Technical assistance was provided through KNCV. 69 prisoners, 32 prison guards, 5 prison heads and 9 nurses were trained TB with emphasis on TB IC mechanism
		Number of TB cases (all forms) diagnosed in children 0-4	This indicator measures the number of TB cases (all forms) diagnosed in children 0-4 years of age. When childhood TB is a priority, being able to report on and measure changes in case notification by age group is important.	3,689	3,947	884 (until June 2013)	
Laboratories							
2.1	Ensured capacity, availability and quality of laboratory testing to support the	Laboratories with working internal and external quality assurance programs for smear microscopy and culture/DST	Laboratories have successfully established a mechanism for performing internal quality control for smear microscopy and culture/DST (e.g. performing	60 smear microscopy; 2 Culture; 1 DST	80 smear microscopy; 3 culture; 3 DST	66 smear microscopy; 3 culture; 2 DST	

	diagnosis and monitoring of TB patients		control samples etc) and are enrolled in an EQA program, which is supervised by a higher-level laboratory (i.e. by proficiency testing, blinded re-checking and supervision visits). Participating laboratories should have met WHO standards for QC/EQA results. Both laboratories, supervising and participating, have to keep data on results for verification.				
		Lab technicians trained on quality assurance AFB microscopy and bio-safety	Laboratory technicians trained on quality assurance AFB microscopy using TB CARE I funds	N/A	22 technicians trained in microscopy servicing	49 technicians (including lab and MOH maintenance staff trained in microscopy maintenance	
				N/A	128 (14 TOT & 114 district level) Lab technicians trained	192 (22 Tot & 180 district level) lab technicians trained from 11 provinces.	The TOT Trainings were led with technical assistance from MSH
				N/A	Train 75 clinicians in 3 provinces	82 clinicians, (27 Gaza, 25 Niassa and 30 Zambézia)	

					in GeneXpert	trained in Xpert algorithm use and suspect referral.	
					47 Lab technicians trained in LED microscopy	50 technicians in 3 regions and in sites where LED were placed trained in LED use	The training focused on laboratory techniques in TB diagnosis, bio-safety, and lab management, and included some practice on slide staining using Auramine O.
		Laboratories demonstrating acceptable EQA performance	Performance of EQA is just as important as having EQA established. This WHO indicator measures the percent of laboratories enrolled in EQA for smear microscopy and/or culture/DST that successfully passed EQA in the last reporting period.	21% (54/252)	45% (114/252)	28% (72/252)	
2.3	Ensured optimal use of new approaches for laboratory confirmation of TB and incorporation of these approaches in	Rapid tests conducted	Number of rapid tests conducted using GeneXpert MTB/RIF.	N/A	1500	1269 (233 MTB+, 73 Rif +)	

	national strategic laboratory plans						
Infection Control:							
3.2	Scaled up implementation of IC strategies	Facilities implementing TB IC measures with TB CARE support	Facilities that received support for implementation of TB IC measures through TB CARE out of the number of facilities planned to receive support for TB IC implementation.	0	11	0	Assessment of facilities implementing IC strategies not conducted
Programmatic Management of Drug-Resistant TB (PMDT):							
4.1.1	Improved treatment success of MDR TB	Improved diagnosis and treatment capacity of MDR TB	Training and supervision of MDR TB focal points and clinicians will be conducted to improve diagnosis and treatment of MDR TB at health facilities	N/A	Train 20 MDR TB focal points and clinicians across 7 provinces on diagnosis and treatment of MDR TB	Activity not implemented in APA3,	The activity could not be implemented as NTP changed their strategy to focus more on the job capacity building of clinicians in MDR TB. The capacity building exercise will be done during integrated NTP/TB CARE I supervision visits. The visits has been planned and budgeted for in APA4 and will be done with KNCV technical assistance.
		MDR TB patients who are still on treatment and have a sputum	MDR TB patients who are still on treatment and have a sputum	146	259	N/A	Semiannual evaluation has not been done by NTP

		culture conversion 6 months after starting MDR-TB treatment	culture conversion 6 months after starting MDR-TB treatment. The cohort is patients put on treatment in a calendar year.				
		A functioning National PMDT coordinating body	National PMDT coordinating body has been established, is recognized by the MOH and is functioning.	No	Yes	Yes	
TB/HIV							
5.1.1	Strengthened prevention of TB/HIV co-infection	Number of TAKSFORCE meetings conducted through TB CARE I funding	Funding support will be provided in realizing quarterly TASKFORCE meetings in TB CARE I provinces	0	28	14 (Zambezia 4, Nampula 4, Gaza 4, Manica 1 & Niassa 1)	Support in 4 provinces provided
		Number of clinicians trained in TB/HIV	Number of clinicians trained in TB/HIV in 7 TB CARE I target province using TB CARE I fund	91	331	124 (34 females and 90 males) trained	
Health System Strengthening							
6.2	TB control components (drug supply and management, laboratories, community	TB CARE-supported supervisory visits conducted	This indicator measures TB CARE's support of NTP's supervisory activities by comparing the number of	12 (yr. 2)	24 visits (10 in Year 2 and 14 in Year 3)	11 conducted	7 integrated NTP/TB CARE I supervision visits + 4 TB CARE I only

	care, HRD and M&E form an integral part of national plans, strategies and service delivery		planned visits in the TB CARE work plan to actual realized.				
		People trained using TB CARE funds	Health care workers at all levels trained on any area of TB control using TB CARE funds	0	128	103	
Malaria							
6.3	Ensured availability and quality of technical assistance and services at both health facility and community level	Number of MOH lab technicians trained in QA system	District level lab staff and QA identified focal points trained in laboratory QA	N/A	Implement QA system in all districts	Activity not implemented	Plan developed , but implementation will be in APA4
6.4	Ensured capacity, availability and quality of laboratory testing to support malaria diagnosis including RDT	No stock out of laboratory reagents reported	Procurement and acquisition of laboratory reagents and consumables ensured to guarantee functioning of the national reference laboratory	Yes	Yes	Yes	
6.5.1	Increased demand for malaria services at both health facility and community level	Number of BCC regional workshops conducted	Regional workshop for BCC strategy will be conducted	0	3	1	2 to be conducted in APA4

6.6	Increased capacity in M&E system at all levels	Number of malaria laboratory supervision visits conducted	Laboratory supervision visits will be carried out to all 11 provinces using TB CARE I funds	0	11	3	Integrated (laboratory and clinical) supervision visits conducted in Inhambane and Maputo provinces. 8 districts were selected in which on the job training and supervision were provided to 50 health professionals in the preparation and administration of parenteral artesunate.
		Number of malaria clinical supervision visits conducted	Clinical supervision visits will be carried out nationwide	0	11	3	
Monitoring, Evaluation & Surveillance							
7.2.1	Improved capacity of NTPs to analyze and use quality data for the management of the TB program	CB DOTS IA reporting valid and quality data to TB CARE I	DQA assessments will be conducted to CB DOTS IA to assure data reported is of quality and is valid	0	10	3	

7.2.2		NTP provides regular feedback from central to intermediate level	NTP prepares and disseminates regular, written and comparative feedback from central to intermediate levels based on analysis of national surveillance and programmatic data.	Yes	Yes	Yes	
7.3.1	Improved capacity of NTPs to perform operations research	National research agenda is defined	NTP operations research capacity will be strengthened through training, scientific meetings and contributions to the finalization of the research agenda and research activities assured with the National Institute of Health	N/A	Yes	Yes	The research agenda has been finalized and disseminated internally with an annotated bibliography
		OR protocol for prevalence study written	Technical visit to prepare for the conduction of a national TB prevalence study in APA	No	Yes	Yes	
Drug Supply & Management							
8.1	Ensured nationwide system for a sustainable	National forecast for the next calendar year is available	A national forecast of both first and second line TB drugs for	Yes	Yes	Yes	The team prepared TB drug estimates for Mozambique for the next 3 years. Notably

	supply of drugs		the next fiscal year has been conducted. If yes, indicate when it was done and by whom (i.e. NTP, TB CARE, other partner).				the results of F&Q exercise the following gaps and excess relation to Tb drug stocks in the country as at May 31st 2013 • Stocked out medicines (medicines with less than 6 months of stock), H300mg and RHE. • Medicines whose quantity is adequate for the country for about 6 months (minimum allowable stock): RHZE(Adults) and RHZ (Pediatric) • Excessive stock and hence high risk of expiry: E400mg and E100mg.
		Anti-TB medicines available at the national level	Guarantee of anti-TB medicines stock at the national level by correct quantification and supply of drugs	Yes	Yes	Yes	
		Data available to support decision making	Information on drug supply and management is made availbale through LMIS tools to support decision	Yes	Yes	Yes	

Universal Access

Universal access remains one of the priority areas for the project in Mozambique. The goal of universal access is to ensure that all people obtain the health services they need without suffering financial hardships when paying for them. To achieve this, it requires a strong, efficient, well-run health system, a system for financing health services, access to essential medicines and technologies and a sufficient capacity of well trained, motivated health workers (WHO, 2012). With this in mind, activities ranging from community based intervention, health facility based activities and technical assistance at central level NTP and NMCP have been implemented in year 3.

Key Results

CB DOTS expansion continues to be a core strategy for NTP, and the project has supported the expansion of CB DOTS to new 5 districts in 3 provinces, bringing to 50 the number of districts supported to date by TB CARE I in the 7 TB CARE I geographical areas. With the expansion, 39% of the country districts have CB DOTS supported by TB CARE I representing 51 % of the population in the country and 66% of the total population covered by CB DOTS. Other partners support CB-DOTS in other districts including 6 districts supported by World Relief and 2 districts by FGH.

The implementation of CB DOTS is through sub agreements signed with local, national and international organizations working in TB control. Nine implementing agencies are supporting the implementation of CB DOTS in the 7 provinces. Through community based trainings in year three, 419 community health workers were trained and integrated with CHWs trained in year one and two. Of the 4,388 trained CHWs since year one, 2,943 (2,462 community volunteers & 481 traditional healers) have been identified as active (67%) (i.e. they are either conducting education sessions or referring suspects/contacts to health facilities or following up on TB patients) in year 3.

Suspect TB referral and treatment forms the cornerstone of Community based activities for CHWs. In APA3, 28,946 TB suspects were referred to health facilities for TB diagnosis through community based activities. Of the referred TB suspects, 3,645 (13%) were TB SS+ with a majority of the cases being males (57%) and the remaining females (43%); 1,215 (4%) were SS-, and 313 (1%) TB EP cases. 18% of the referred cases, were confirmed TB cases (all forms). Out of the 3,645 SS+ cases, 1,021 were HIV-positive; representing a co-infection rate of 29% (58% are males and 42% females).

In districts supported by TB CARE I, of all TB cases identified and put on treatment, CB DOTS implementing partners contribute 75% with the remaining being cases diagnosed through routine health facility actives. In addition to sending TB suspects to health facilities, CHW referred 4.950 contacts to health facilities; through community and health facility-based educational sessions, CHWs reached 604,630 people with essential information on TB prevention and TB signs and symptoms.

Through the community-based integrated TB/Malaria approach, trained CHW were actively referring malaria cases to health facilities. A total of 41,514 (48% males and 52% females) malaria suspects were referred for diagnosis purposes and 23,432 (56%) of them were positively diagnosed as having active malaria and put on treatment.

The project supported two ToT training workshops on the use of the TB IC checklist developed under TB CARE I by FHI360. One workshop was held in Maputo and a second was held in Nampula province. The Maputo workshop was designed mainly for TB managers from CB DOTS implementing agencies and NTP, while the Nampula training was tailored to district level supervisors and NTP staff working in health facilities. A total of 45 participants attended both trainings. Trained TB managers from 6 CB DOTS implementing agencies conducted a step down training for community health workers (CHW) in 4 TB CARE I target provinces, training 448 CHW in community IC using the checklist and translated

manual. These trainings of CHWs have increased community awareness about TB IC, especially basic principles like opening of windows to facilitate the flow of air, observation of basic home hygiene, cough etiquette etc. which are vital in preventing TB transmission.

MSH recruited a TB advisor to lead implementation of the ICF strategy as well as provide the much needed intensive mentorship field visits. Baseline survey data collection tools were developed and data collection completed in three health facilities in the Gaza province: the Chibuto, Chokwe and Chicumbane with the aim of collecting data before the intervention is implemented for impact assessment purposes. Key results to date include availability of baseline data on the TB situation in selected sites for ICF implementation including vital information on challenges, constraints and opportunities existent. Also, the ICF SOPs have been finalized and in process of being translated into Portuguese for implementation purposes.

In order to increase Pediatric TB diagnosis in the country, the TB CARE I project supported provincial level clinicians. The trainings were led by trained pediatricians and medical doctors in a TOT supported by NTP and EGPAF. The awaited outcomes will be an increase in Pediatric TB screening and diagnosis as well as improvements its clinical management. A total of 88 clinicians were trained in two provinces of Tete and Sofala in September 2013, with the immediate result of the training being an increase in number of health care workers with ability to diagnose and manage TB in children. The project also supported the procurement of 1,500, tuberculin kits (containing 25.000 units) which are needed in the diagnosis of pediatric TB. The tests have been distributed nationwide and will complement the training offered to clinicians with practical demonstrations on its use (PPD tests) being done (administration and reading of the reaction). Additional trainings are planned in other provinces. To monitor results in provinces were the training has taken place, follow up provincial plans with specific targets and an M&E plan have been elaborated and will be closely monitored by TB CARE I during quarterly visits planned in APA4.

The TB CARE I project supported in the implementation of Patient Centered Approach on two selected districts. Results collected from the end line survey showed that after implementation of the three selected tools (patient Charter, TB Literacy toolkit and Quote TB light), of the 120 respondents 26% could now correctly state their rights and responsibilities as TB patients which during baseline it was basically 0%; 31,88% had knowledge of the Patient Charter and had demonstrated positive experience in changing how they interact with other community members and patients and a staggering 88% had now shared their health information with their families after diagnosis for support purposes. This increase in perception which has been linked to the use of the PCA tools has a significant impact in the control of TB especially related to prevention, detection, treatment and care.

Laboratories

Technical assistance in the implementation of the lab component for TB CARE I is provided by MSH and FHI360 in close coordination with the National Laboratory Coordinator for AFB Microscopy Network. The AFB lab section is part of the NTP while the National Institute of Health is responsible for the management of TB Reference Labs. About 12% of the TB CARE I year 3 budget was allocated to the laboratory component. Main focus is the expansion of the laboratory network in the country as well as expanding access to new technologies (GeneXpert and LED), which were procured and installed in year 2.

Key Results

82 clinicians from three sites where GeneXpert machines were placed (27 from Gaza, 25 from Niassa and 30 from Zambézia provinces) were trained in GeneXpert technology, algorithm to be used and sample referral from remote areas to testing sites. As a result of this training, more presumptive MDR TB cases were tested and an increase in confirmed MDR TB cases was noted.

For example, in Gaza province where one of the GeneXpert machines is installed, comparative data between September 2011 to September 2012 show that only 14 MDR TB cases were diagnosed before GeneXpert while the period September 2012 to September 2013, 41 Rif+ cases were identified with 20 confirmed cases and 21 mono-resistant in Rif. HIV positive clients have direct access to Xpert testing in the 3 sites where the project placed the GeneXpert machines. Clinicians from health facilities around the sites where GeneXpert machines were placed were trained in the GeneXpert algorithm with emphasis given to the testing of HIV positive clients with SS- negative.

The project supported the functioning of GeneXpert in the three sites and a total of 1,269 samples were successfully tested, with 233 tested as MTB positive and 73 of these were identified with rifampicin resistance. Before Xpert implementation, samples from presumptive MDR TB cases were sent to Beira or Maputo and the turnaround time in results was around 2-3 months before any treatment was initiated. With the use of Xpert in the sites previously not covered, treatment of suspected MDR TB cases is started as soon as the Rif+ results are attained while awaiting culture results.

GeneXpert tests conducted in TB CARE supported sites	
Presumptive **MDR-TB**	
Total successful **tests**	**1,269**
Number of **MTB+** cases diagnosed using Xpert	**233**
Number of **Rif+** (and MTB+) diagnosed	**73**
TB positivity rate	**24%**
Rif resistance rate	**24%**

Additional 15 LED microscopes were procured and distributed to 15 selected sites, bringing the total number of LED microscopes procured by the project to 55. The use of LED fluorescence microscopy (FM) is expected to improve case detection rate for TB diagnosis due to sensitivity. From the functioning LED installed, a comparison was conducted for one LED installed in Quelimane district hospital for the period of October 2012 to October 2013, with 1,423 samples being tested of which

153 were positive. This number compared to test results conducted through the Bright Light microscopy for the same period show that 163 more cases were tested through LED with an additional increase of 33% in TB cases diagnosed.

In order to improve the quality of AFB smear microscopy using Ziehl-Neelsen, 400 job aids were printed and distributed all over the country. In addition, since Ziehl-Neelsen is being replaced by LED FM in 55 laboratories with TB CARE I support, 100 job aids have been printed and distributed.

In coordination with ICAP, the project supported the conduct of a Lab Quality Assurance workshop in Nampula Province; 65 lab technicians from 21 districts participated. The training focused on EQA and random and systematic selection of AFB slides. The technicians were trained in random selection of slides and since each district had brought with them stained slides, slides were changed between groups and blind re-checking exercise done.

The slides selection were for the period July to September and all selected slides have been sent to the provincial level laboratory for blind rechecking after a systematic random selection to eliminate bias. During the workshop a blind rechecking exercise was conducted with 21 laboratories bringing their slides for re-observation. A total of 127 slides were re-observed, with 5 of the 21 laboratories with errors in quantization results, 2 laboratories had discordance errors, 1 lab had one false positive result and another had one false negative result. In the next EQA workshops with random selection being done, a more realistic reflection of slide observation which happens at district and peripheral laboratories will be verified. Feedback at provincial level will be sent to district and peripheral level laboratories and if false positive or negative results are identified, laboratories with a percentage of less than 80 will be visited for improvement.

Following the realization that many microscopes sent for repair were not broken but only needed routine maintenance, the project responded to a request by NTP to support in the training of technicians in microscope maintenance. A total of 49 laboratory and maintenance technicians were trained in three regional workshops (Southern, Central and Northern) covering all provinces. The training covered not only basic maintenance for microscopes, but repair techniques as well. The repair and maintenance process will continue in all provinces to ensure proper functioning of the microscopes. The training also provided an opportunity for laboratory technicians and maintenance teams to work together in solving challenges related to communications.

To ensure quality improvement, 22 laboratory technicians from all 11 provinces were trained as trainers in AFB microscopy, bio-safety, quality assurance, laboratory management and supervision, in Maputo. The second level training, also supported by the project, was conducted in all provinces by the previously trained lab technicians resulting in a total of 180 laboratory technicians trained.

Procurement of laboratory commodities and reagents for the Malaria laboratory component was completed and the commodities procured have been adequate for a year, thus preventing stock outs in health facilities. Supplies and commodities procured will be used for both TB and Malaria diagnosis and will improve laboratory diagnosis of both diseases.

Infection Control

TB CARE I has increased its intervention level in infection control, an area previous dominated by other partners such as JPHIEGO. Previous interventions have been limited to printing of IC checklist and its distribution in health facilities. In APA3 activities increased to include Community level IC interventions, construction and renovations of health facilities, and printing of tools including manuals for IC at health facilities.

Key Results

The project supported two ToT training workshops on the use of the TB IC checklist developed under TB CARE I by FHI360. One workshop was held in Maputo and a second was held in Nampula province. The Maputo workshop was designed mainly for TB managers from CB DOTS implementing agencies and NTP, while the Nampula training was tailored to district level supervisors and NTP staff working in health facilities. A total of 45 participants attended both trainings. Trained TB managers from 6 CB DOTS implementing agencies conducted a step down training for community health workers (CHW) in 4 TB CARE I target provinces training 448 CHW in community IC using the checklist and translated manual. The administrative and environmental mechanism for IC contained in the checklist have increased community awareness about TB IC, especially basic principles like opening of windows to facilitate the flow of air, observation of basic home hygiene, cough etiquette etc. which are vital in preventing TB transmission.

A total of 18 national and provincial infrastructure technicians were trained in infection control and adequacy of construction and rehabilitation of health facilities. The training was a first in the country and was led by the FHI360 Infrastructure manager trained in Building Design and Engineering Approaches to Airborne Infection Control at University of Pretoria, South Africa. After the training, the technicians were actively involved in the designing of infrastructure for MOH supported by the government and other partners to guarantee that any infrastructure (new or rehabilitation) respects infection control recommendations in order to reduce the risks of TB transmission. Plans for the rehabilitation of TB micro laboratories in 5 TB CARE I provinces in APA3 were designed with support from the trained construction technicians and meet national TB IC requirements.

The main challenges continue to be infrastructure with inadequate IC control measures, lack of awareness among HCW and CHW about the risk for TB infection by not practicing adequate IC measures and insufficient individual protection equipment. For infrastructure, TB CARE I will continue to improve conditions in TB corners with 7 health facilities in 7 provinces targeted in APA4, sensitization and on the job training provided to health care workers during TB CARE I/NTP supervision visits.

Programmatic Management of Drug Resistant TB (PMDT)

PMDT remains one of the priority areas for TB CARE I Mozambique given the identified challenges with NTP in early diagnosis of MDR TB and case management, data collection and reporting. To address these and other challenges, TB CARE I has contracted one MDR TB technical officer to support the NTP. In APA3, KNCV technical assistance has been more focused on development of tools for MDR TB supervision visit, revision and finalization of the MDR TB guideline and revision and updating of M&E tools. Also supporting in the revision and updating of tools in line with the revised WHO Case definitions is the WHO contracted national program officer (NPO).

Key Results

Two short technical assistance visits were conducted by KNCV MDR TB specialist. After the visit and as a result of TA provided to the NTP and clinician, especially towards patient follow up activities, request for exams for culture and DST, an improvement in presumptive case investigation was registered in all provinces. Previously treatment was confined in few provinces due to lack of technical capacity in case management and treatment. The supervision visits initiated for DR TB only coupled with the training of clinician's in DR TB has increased clinical technical capacity with all of the 11 provinces at the moment administering and following MDR TB cases.

The visit also served as an opportunity to improve data register, collection and reporting tools in MDR TB which had been identified as weak. Currently the NTP with support from TB CARE I and CDC are updating MDR TB tools. Such tools include the TB MDR Check list which was developed by KNCV MDR TB specialist, piloted in the country and has been adapted and submitted to PNCT for approval. The use of the checklist will strengthen patient registration; improve case follow up and reporting by health facilities.

One of the recommendations from the TA mission was the need to create a National Clinical MDR-TB committee but this could not happen since national guidelines only allow for the creation and functioning of one national committee. But given the urgency and need to have a controlling body to respond issues related to the management of MDR TB patients, the PNCT accepted to create a technical advisory group. The group is composed of NTP and health partners working in the DR TB area. The advisory group has by now managed to discuss on two DR TB complicated cases. A format to be used to document discussion proceedings and reporting on cases discussed was developed and submitted to NTP for approval.

Two MOH staff participated in the 2 week WHO DR TB training in Sondalo with TB CARE I support. After the training, the 2 NTP staff are actively involved in supervision visits and training for TB/HIV directed towards clinicians working in 4 TB CARE I target provinces. The training also offered an opportunity for the NTP Program Manager who was one of the participants to have a better understanding of the programmatic management of DR TB which have strengthened his informative decision making in the area.

During NTP/TB CARE I integrated supervision visits, MDR TB is a priority area where all TB patients in treatment are assessed in relation to the initial diagnosis done, treatment regime being used, frequency of control exams – SS and culture, duration of treatment, DOTS system applicable, possible side effects of drugs and the management and case evolution in general. All health professionals who intervene in case management benefit through an on job training to improve the follow up of patients and the application of IC measures to reduce transmission

Challenges facing NTP continues to be related to communication especially sample referral and feedback of results to shorten the period of results and initiation of treatment, improvement of MDR TB clinical case management and timely data collection and reporting. Another constraint facing MOH is the adequate number of inpatient wards/hospitals for MDR TB patients to assure treatment adherence and reduce transmission of TB. Constant drug stock outs especially SLD affects also treatment outcomes. TB CARE I in APA4 and other partners (GF) will strengthen support for MOH/NTP in 2014 in PMDT and will try to address these constraints.

TB/HIV

The incidence of TB/HIV co-infection rate continues to increase with current figures reported to be around 58% (WHO Global TB Report). To address this situation FHI360 within the TB CARE I project in close coordination with NTP has embarked on training of clinicians in TB/HIV collaborative activities in order to assure complete services related to counseling and testing to all TB patients within the TB sector, administration of CPT and ARV when indicated is secured. On the other hand, clinical support to staff working in the HIV sector has been provided in increasing screening of TB in all HIV patients, TB treatment and administration of IPT as necessary.

Key Results

Two MOH and one TB CARE I staff participated in the Rwanda TB/HIV training workshop meant to provide an overview of TB/HIV co-infection and policy recommendations to decrease the burden of TB in people living with HIV and HIV in patients with TB, with a focus on integration of TB/HIV activities in national programs.

Upon successful participation in the Rwanda workshop, the trained personnel/staff are now actively involved in the provincial trainings of clinicians in TB/HIV supported technically and logistically by the TB CARE I project. In APA3, 4 trainings have been conducted with 124 clinicians being trained. The aim of the training is to provide health professionals (clinicians) with tools and skills for early screening of TB, with special attention towards children and TB/HIV co-infected patients and correct case management of TB, MDR TB and TB/HIV. Following to the training, provinces will develop a monitoring plan meant to follow up on trained clinicians to ensure that early diagnosis, treatment and care of TB/HIV co-infected patients is guaranteed.

Initiation of IPT is still a challenge given the level of acceptance by most health professionals (clinicians) in administration of isoniazid because of fear to treat TB patients using monotherapy and consequently resistance to Isoniazid. Also constant stock out of the drug affects its implementation.

To address this also the project will reinforce provincial TASKFORCE meetings were issues relating to IPT implementation will be discussed, supervision visits, conduction of TWG discussion and support the NTP/MOH in the dissemination of guidelines on TB/HIV to district level

Health System Strengthening (HSS)

Efforts to improve the functioning of NTP by TB CARE I are being done by all coalition partners in Mozambique with the WHO NPO officer sitting at the NTP, and other technical officers from FHI360 and MSH with technical assistance from KNCV providing on the job assistance to NTP staff in CB DOTS, TB/HIV, MDR TB, Pediatric TB, Drug management, Laboratory assistance, M&E and operational research. FHI360 is also supporting the NMCP with 4 people contracted by the TB CARE I supporting in all Malaria aspects and sitting at the national malaria control program.

Key Results

Four malaria central level integrated supervision visits and one provincial visit were conducted with TB CARE I support. Post training supervision has been planned in order to identify, analyze and correct new treatment guidelines implementation problems. The supervision visits have been planned in a formative way and divided by three levels: central, provincial and district level supervision, with the central being the highest technical support level. The central level comprises qualified health professionals who provide technical assistance to the provinces in all malaria components. In each visited province, 4 districts with the highest malaria burden are selected and on the job training exercise in conducted involving a total of around 150 health professionals in the preparation and administration of parenteral artesunate and other related issues. Main supervision findings and recommendations have been for the first time compiled in an electronic data base created from the supervision manual. Supervision visits conducted in APA3, starting from April 2013, were targeted to provinces which has concluded the lab and clinical trainings and the main findings were:

- Stock-out of antimalarial drugs, laboratory consumables and reagents in variable degrees in different provinces.
- Clinical practices in malaria case management far from the desired
- Absence of a functional Pharmacovigilance system
- inadequate use of RDTs in malaria diagnosis including use for control purposes
- Poor data quality
- High work load and inadequate infra-structure
- Despite all these facts, an overall improvement in malaria case management, including the increase of microscopy diagnosis of other malaria spices.

After conclusion of the central level supervision, provincial supervision were planned in all four provinces but to date have been conducted in one province of Inhambane province. Remaining districts not covered by the central level supervision visits will be covered by the provincial level supervision visit.

Since supervisions have been conceived as essentially formatives and a basis for provision of technical assistance, challenges and constraints in the implementation of malaria related activities will be identified, adequate corrective measures addressed and the overall malaria indicators performance improved at all levels.

Following on the NMCP external evaluation and national strategic plan implementation, a National Malaria Advocacy and Communication strategy was developed in close coordination with WHO, MOH and TB CARE I. The finalized and approved communication strategy will be disseminated in 3 regional BCC workshops and 400 copies have been produced. The southern region BCC workshop was conducted with the aim to disseminate the strategy in order to standardize all malaria

communication messages and advocacy in Malaria. A total of 16 health professionals were among the participants including also medical doctors and health technicians working in the malaria area.

Joint supervision visits were conducted in 7 TB CARE I target provinces focusing on the TB component including MDR TB, Laboratory and drug management. Functioning of the NTP at district and peripheral level is assessed and support is given to health professionals in TB diagnosis, treatment and care. During the supervision major findings included the existence of new staff supporting the program at district and peripheral level with insufficient training and limited knowledge on TB program management, inconsistency in recording of data in the TB register, mistakes on patient classification and treatment result, missing vital information on individual patient cards and the lack of communication between pharmacy, laboratory and TB sector/program in terms of number of patients diagnosed and registered in the Lab register, patients under treatment and availability and distribution of drugs. As a response, on the job training in technical and M&E areas is offered by the supervision team to improve functioning of the program. Principal recommendation will be to conduct alternating central and provincial level supervision visits to districts which will guarantee at a minimum 4 visits per year to each district for close follow up.

Rehabilitation of 5 micro laboratories in 5 TB CARE I provinces is in progress. The rehabilitation exercise is a response to the need to expand the country laboratory peripheral network which will serve as referral lab for surrounding peripheral health facilities. The expansion will increase TB case detection rate as samples will be proceed locally, shorten distance between peripheral health facilities and district laboratories thereby reduce expenses incurred by patients and or CHW on transport costs and existence of the micro lab reduce transmission risk among CHW as they will no longer need to transport samples to district level labs. The rehabilitation structures in the five selected peripheral health facilities will follow the recommendations of MOH on IC measures in constructions.

Monitoring & Evaluation, Surveillance and OR

Efforts to improve the NTP M&E department functioning by TB CARE I are being done by all coalition partners in Mozambique with the WHO NPO officer sitting at the NTP and FHI360 Senior M&E Officer providing 20% of her man hours at the NTP and KNCV M&E experts supporting in data collection, reporting and analysis.

Key Results

Reporting of quality data has always been an important issue for TB CARE I Mozambique, as CB DOTS implementing agencies implement activities in the communities, their M&E officers received technical assistance on data quality assurance. During APA3, data quality assurance visits were conducted in three provinces, and 7 CB DOTS implementing partners were provided with technical assistance to improve their M&E system on data collection methods, analysis, use as well as reporting to the project. TB CARE 1 in APA4 will standardize data collection instruments across all partners to ensure consistency in data collection and reporting.

As part of the preparation to conduct a national TB prevalence study, TB CARE I provided external technical assistance. Main results from the TA show that, 1) TB Experts consulted estimated the point prevalence of TB in Mozambique to range between 400-600/100,000 (mean 510). 2) CXR reading capacity and CXR infrastructure (n=60) is very low in Mozambique relative to the size of the population and should be enhanced, 3) given the strong epidemiologic relationships and scientific benefits, it may be synergistic to combine the TB and HIV prevalence surveys and 4) a smaller scale TB/HIV active case finding effort should be conducted (in a very high burden area) in 2014 as a stress test/training/ skills development/equipment testing exercise to refine the clinical skill sets and build field experiences needed for successful execution of the prevalence survey. A follow up mission visit by KNCV is planned for APA4 to support NTP.

The KAP study has been finalized and preliminary results have been presented. Results suggest that there is a general understanding of signs and symptoms of TB within the sampled population. However, there is a popular misconception on how TB is transmitted based on socio cultural beliefs and norms such as : TB can be transmitted through sexual intercourse with a widow, or with a woman who has had an abortion, or by having intercourse with a woman during her menstruation periods; TB can also be transmitted through witchcraft or due to lack of compliance with traditional ceremonies of a death of a family member. The study identified 3 barriers to health care seeking behavior:1) individual level which has to do with lack of correct knowledge, long treatment period, collateral advise side-effects of TB treatment, 2) discrimination and stigma, 3) social-cultural aspects – preference for traditional medicines, fear and lack of confidence in health services and health workers, weak family and community support system, and 4) Institutional factors- limited collaboration of [whom] with community structures, limited diagnostic capacity at health capacity, distance from community to health facilities, stock out of medication and laboratory materials. These findings will be used to develop new or update existing IEC materials, and identify priority groups among the general population that need to be targeted , and to guide the development of new policies and strategies for TB prevention and control.

The Rapid Expansion of Microscopy study has been completed, and a final report submitted to NTP and TB CARE I. The study was to determine the outcome of rapid expansion of laboratory units and training of nursing personnel on the quality of TB sputum smear microscopy in the districts that they serve. The study results shows that, four years after training, half of the trained personnel are still active and working in the lab while the other half are no longer active nor working in the laboratory. The main reasons for this drastic reduction is related to limited supervision visits, lack of continued training opportunities and activity follow up from district and provincial directorate of health. These

findings will be used to revise the strategy and place emphasis on the need for more frequent supervision.

Drug supply and management

Drug management is the main activity that MSH provides TA and support for under TB CARE I. Under this activity, MSH provided direct support to the NTP in supply chain management, bringing together drug management stakeholders into a technical working group and spearheading annual forecasting and quantification exercise.

Key Results

1. MSH conducted a financial gap analysis in June involving 30 key TB drug management stakeholders including 5 MOH staff. At first, it was estimated that $10,549,146 would be required in order to maintain adequate supplies of TB medicines in 2013, 2014 and 2015. In addition to the June gap analysis, a quantification exercise was conducted for 2014 to 2016. The initial forecast for first line anti-TB drugs was conducted centrally by the Technical Medicine Group (TMG) and was based on the case notification method, which used the Global Drug Facility (GDF) drug tool. Tools provided by the WHO were used to calculate needs and the factors were adjusted according to the treatment guidelines in place (in units, means tablets, or vials). The number of treatments was based on NTCP projections and the team agreed on a progressive growth of 6%, 9%, 9%, 10%, and 10% from 2013 to 2017. It means that the total number of treatments is expected to increase from 53,877 in 2013 to 77,453 in 2017. This projection also includes Isoniazid to provide IPT for children and adults with HIV. Additionally, this quantification included treatment for 771 MDR-TB cases, buffer stock of 100% for first line drugs, and 10% for second line drugs. These were agreed upon by the TMG. Notably the results of the forecasting and quantification (F&Q) exercise revealed the following gaps in the medicine stocks status in the country as at May 31st 2013:

    - Stocked out medicines (medicines with less than 6 months of stock): H300mg and RHE.
    - Medicines whose quantity is adequate for the country for about 6 months (minimum allowable stock): RHZE(Adults) and RHZ (Pediatric)
    - Excessive stock and hence high risk of expiry: E400mg and E100mg.

    The gap analysis was updated in September 2013 upon the request of the NTCP. During this exercise, the projection of the MDR-TB cases for 2014 to 2016 was updated to 1,194 MDR-TB cases using an ambitious projection. As a result of this exercise, the projected financial gap for 2014 to 2016 increased to 15,269,930 USD. The NTCP has proposed to be funded by the Global Fund to address this gap.
2. The training manual on drug management has been revised and disseminated in electronic version to nearly 50% of the country during the trainings to pharmacy personnel. At the same time, copies are being printed and will be completed soon. These will be used for countrywide distribution and implementation in APA 4. Additionally, TB CARE I has been supporting the printing and distribution of all the forms used by the NTCP to manage the TB drug management system.
3. Both a supervisory plan and supervisory checklist to support the drug management system were developed. It is expected that the NTCP will approve these documents and begin implementation in APA 4.
4. TB CARE I supported the Pharmacist Department to revise and print adverse drug reaction (ADR) forms. These forms will be used to train health workers during health related trainings.
5. MSH continued to host the TB drug management technical working group (TWG) and to coordinate the monthly supply chain review meetings as well as the quarterly meetings to develop the stock re-distribution plans.

6. Other activities included: Supporting NTP to coordinate stock distribution and the calling down of suppliers from the Global Drug Facility (GDF).

Challenges

1. Delay in findings suitable staff to hire due to language barrier and general staff shortage in the country.
2. Difficulties in mobilizing funds to the country to support planned project activities.
3. Language barrier that requires all tools and guidelines development to be translated from English to Portuguese before they can be approved or implemented.

Pictures:

GeneXpert room rehabilitated by TB CARE I to guarantee adequate conditions for the functioning of the TB CARE I Xpert machine in Quelimane hospital of Zambezia province

Training of Lab Technician in New Technologies (LED) supported by TB CARE I

Community Outreach activities – Mobile lab Units in one community of Niassa Project

Verification of data registered at one HF supported by CB DOTS Implementing partner in Gaza Province (part of DQA)